WHAT IS CLAIMED IS:

1. A method of filling gaps between electrically conductive lines on a semiconductor substrate comprising the steps of:

providing a substrate in a process chamber of an inductively coupled plasma-enhanced chemical vapor deposition reactor;

introducing a process gas comprising a noble gas into the process chamber wherein the amount of noble gas is sufficient to assist in gap filling; and

growing a dielectric film on the substrate, the dielectric film being deposited in gaps between electrically conductive lines on the substrate.

2. The method of Claim 1, wherein the process gas further comprises a silicon-containing reactant gas selected from the group consisting of SiH_4, SiF_4, Si_2H_6, TEOS, TMCTS, and mixtures thereof, said process further comprising decomposing the silicon-containing reactant to form a silicon containing gas and plasma phase reacting said silicon-containing gas on a surface of the substrate.

3. The method of Claim 2, wherein the process gas comprises a reactant gas selected from the group consisting of H_2, O_2, N_2, NH_3, NF_3, N_2O, and NO, and mixtures thereof.

4. The method of Claim 2, wherein the process gas comprises a reactant gas selected from the group consisting of boron-containing gas, phosphorous-containing gas, and mixtures thereof.

5. The method of Claim 3, wherein the process gas comprises a reactant gas selected from the group consisting of boron-containing gas, phosphorous-containing gas, and mixtures thereof.

6. The method of Claim 1, wherein the vacuum is maintained at about 1 mTorr to about 30 mTorr.

7. The method of Claim 1, wherein the film is deposited on a silicon wafer and the gaps are between conductor lines comprising aluminum, copper, tungsten, and mixtures thereof.

8. The method of Claim 1, further comprising applying a radio frequency bias to the substrate.

9. The method of Claim 8, wherein the step of applying a radio frequency bias to the substrate comprises supporting the substrate on a substrate holder having an electrode supplying a radio frequency bias to the substrate, the radio frequency bias being generated by supplying the electrode with at least 2 watts/cm^2 of power.

10. The method of Claim 8, wherein the radio frequency bias applied to the a substrate is at a frequency of between about 100 kHz to 27 MHz.

11. The method of Claim 1, wherein the substrate is positioned on a substrate holder that is maintained at a temperature of about 80°C to 200°C.

12. The method of Claim 1, further comprising supplying a heat transfer gas between a surface of the substrate and a surface of a substrate support on which the substrate is supported during the film growing step.

13. The method of Claim 12, further comprising clamping the substrate on an electrostatic or mechanical chuck during the film growing step.

14. The method of Claim 13, wherein heat transfer gas which comprises helium and/or argon is supplied to a space between a surface of the substrate and a surface of the chuck.

15. The method of Claim 1, further comprising plasma phase reacting an oxygen-containing gas in the gaps and removing polymer residues in the gaps prior to the

film growing step.

16. The method of Claim 1, wherein the dielectric film comprises silicon oxide.

17. The method of Claim 1, wherein the dielectric film comprises SiO_2.

18. The method of Claim 1, wherein the process gas includes a silicon and fluorine-containing reactants and the dielectric film comprises silicon oxyfluoride.

19. The method of Claim 1, wherein the gas mixture includes a nitrogen-containing gas and the dielectric film comprises silicon oxynitride

20. The method of Claim 1, wherein the inductively coupled plasma is generated by a substantially planar induction coil.

21. The method of Claim 1, wherein the process gas is introduced through a gas supply including orifices, at least some of the orifices orienting the process gas along an axis of injection which intersects an exposed surface of the substrate at an acute angle.

22. The method of Claim 21, wherein the step of introducing a process gas comprises the step of supplying a gas or gas mixture from a primary gas ring, wherein at least some of said gas or gas mixture is directed toward said substrate.

23. The method of Claim 22, wherein the step of introducing the gas further comprises the step of supplying an additional gas or gas mixture from a secondary gas ring.

24. The method of Claim 22, wherein injectors are connected to said primary gas ring, the injectors injecting at least some of said gas or gas mixture into said chamber and directed toward the substrate.

25. A method of filling gaps between electrically conductive lines on a semiconductor substrate and depositing a capping layer over the filled gaps comprising the steps of:

providing a substrate in a process chamber of an inductively coupled plasma-enhanced chemical vapor deposition reactor;

filling gaps between electrically conductive lines on the substrate by introducing a first process gas and growing a first dielectric film in the gaps at a first deposition rate; and

depositing a capping layer comprising a second dielectric film onto the surface of said first dielectric film by introducing a second process gas into the process chamber, said layer being deposited at a second deposition rate that is higher than the first deposition rate.

26. The method of Claim 25, wherein the dielectric film comprises silicon oxide, the first and second process gases including a silicon reactant and an oxygen reactant, the second process gas containing higher amounts of the silicon and oxygen reactants than the first process gas.

27. The method of Claim 25, wherein the dielectric film comprises silicon oxide, the first and second process gasses including a noble gas, the first process gas including a higher amount of the noble gas than the second process gas.

28. The method of Claim 25, wherein an RF bias is applied to the substrate during the gap filling and capping steps, the RF bias being higher during the gap filling step than during the capping step.

29. The method of Claim 25, wherein the substrate is positioned on a substrate holder that is maintained at a temperature of about 80°C to 200°C.

30. The method of Claim 25, wherein the process gas is introduced through a gas supply including orifices, at least some of the orifices orienting the process gas along

an axis of injection which intersects an exposed surface of the substrate at an acute angle.

31. A method of depositing a dielectric film substrate comprising the steps of:

providing a substrate in a process chamber of an inductively coupled plasma-enhanced chemical vapor deposition reactor wherein the substrate is positioned on a substrate holder;

introducing a process gas comprising a noble gas into the process chamber wherein the amount of noble gas is sufficient to cause sputter etching;

controlling the temperature on a surface of the substrate holder; and

energizing the process gas into a plasma state by inductively coupling RF energy into the process chamber and growing a dielectric film on the substrate.

32. The method of Claim 31, wherein the process gas further comprises a silicon-containing reactant gas selected from the group consisting of SiH_4, Si_2H_6, SiF_4, TEOS, TMCTS, and mixtures thereof, said process further comprising decomposing the silicon-containing reactant to form a silicon containing gas and plasma phase reacting said silicon-containing gas on a surface of the substrate.

33. The method of Claim 32, wherein the process gas comprises a reactant gas selected from the group consisting of H_2, O_2, N_2, NH_3, NF_3, N_2O, and NO, and mixtures thereof.

34. The method of Claim 32, wherein the process gas comprises a reactant gas selected from the group consisting of boron-containing gas, phosphorous-containing gas, and mixtures thereof.

35. The method of Claim 33, wherein the process gas comprises a reactant gas selected from the group consisting of boron-containing gas, phosphorous-containing gas, and mixtures thereof.

36. The method of Claim 31, wherein the process chamber is a vacuum

maintained at about 1 mTorr to about 30 mTorr.

37. The method of Claim 31, further comprising applying a radio frequency bias to the substrate.

38. The method of Claim 37, wherein the step of applying a radio frequency bias to the substrate comprises supporting the substrate on a substrate holder having an electrode supplying a radio frequency bias to the substrate, the radio frequency bias being generated by supplying the electrode with at least 2 watts/cm^2 of power.

39. The method of Claim 37, wherein the radio frequency bias applied to the substrate is at a frequency of between about 100 kHz to 27 MHz.

40. The method of Claim 31, wherein the substrate is positioned on a substrate holder that is maintained at a temperature of about 80° C to 200° C.

41. The method of Claim 40, further comprising supplying a heat transfer gas between a surface of the substrate and a surface of a substrate holder.

42. The method of Claim 41, further comprising clamping the substrate on an electrostatic or mechanical chuck during the film growing step.

43. The method of Claim 42, wherein the heat transfer gas which comprises helium and/or argon is supplied to a space between a surface of the substrate and a surface of the chuck.

44. The method of Claim 40, wherein the dielectric film comprises silicon oxide.

45. The method of Claim 40, wherein the dielectric film comprises SiO_2.

46. The method of Claim 40, wherein the process gas includes a silicon and fluorine-containing reactants and the dielectric film comprises silicon oxyfluoride.

47. The method of Claim 31, wherein the gas mixture includes a nitrogen-containing gas and the dielectric film comprises silicon oxynitride.

48. The method of Claim 31, wherein the inductively coupled plasma is generated by a substantially planar induction coil.

49. The method of Claim 31, wherein the process gas is introduced through a gas supply including orifices, at least some of the orifices orienting the process gas along an axis of injection which intersects an exposed surface of the substrate at an acute angle.

50. An inductively coupled plasma processing system comprising:

a plasma processing chamber;

a substrate holder supporting a substrate within said processing chamber wherein the substrate holder is at a temperature of about 80° C to 200° C;

an electrically-conductive coil disposed outside said processing chamber;

means for introducing a process gas into said processing chamber; and

an RF energy source which inductively couples RF energy into the processing chamber to energize the process gas into a plasma state.

51. The system of Claim 50, wherein the process gas comprises a silicon-containing reactant gas selected from the group consisting of SiH_4, SiF_4, Si_2H_6, TEOS, TMCTS, and mixtures thereof.

52. The system of Claim 50, wherein the process gas comprises a reactant gas selected from the group consisting of H_2, O_2, N_2, NH_3, NF_3, N_2O, and NO, and mixtures thereof.

53. The system of Claim 50, wherein the process gas comprises a reactant

gas selected from the group consisting of boron-containing gas, phosphorous-containing gas, and mixtures thereof.

54. The system of Claim 50, wherein the process gas comprises a reactant gas selected from the group consisting of boron-containing gas, phosphorous-containing gas, and mixtures thereof.

55. The system of Claim 50, wherein the process chamber is a vacuum maintained at about 1 mTorr to about 30 mTorr.

56. The system of Claim 50, wherein the substrate a further comprising an RF generator that is connected to the substrate produces an RF bias.

57. The system of Claim 50, wherein the means for introducing the process gas comprises a gas supply including orifices, at least some of the orifices orienting the process gas along an axis of injection which intersects an exposed surface of the substrate at an acute angle.

58. The system of Claim 50, wherein the coil is substantially planar.